

CLAIMS:

We claim the following as the subject matter of our invention (hereinafter, "inlet door") as it relates to an improved inlet system for trash chutes, linen chutes, (and any appropriate synonym for either "trash" or "linen" or "chute"), chute shafts and/or chute enclosures, (collectively, and hereinafter "chutes").

1. An inlet door to provide access to a chute constructed as or behind a fire-rated wall whether such wall is existing or new, and if existing, whether or not such an existing wall includes an existing chute frame remaining after the removal of a malfunctioning chute door, that includes several components including wherein its several improvements comprise:

a frame, open in the middle that is configured to function simultaneously in three separate planes: 1) an outward horizontal projected plane (toward the user) of a depth less than four (4") inches in accordance with specific requirements of the Americans' with Disabilities Act (ADA); 2) four flat surfaces interconnected to present a single vertical plane parallel to the wall in which it is to be mounted, set around said middle opening, that presents a vertical surface comprised of the aforementioned flat surfaces of sufficient width to overlap an existing chute door frame in all directions while simultaneously providing a vertical mating plane for the mounting of the inlet door to either a wall surface for new or retrofit construction, or the face of an existing chute frame where the original door has been removed to facilitate retrofit installation of the current art, or to the vertical surface of an adaptor designed as part of the current invention to allow flush mounted installation of the current art in new construction, where said vertical mating surface provides mounting space for fire-stopping expanding gaskets (Stage II Gasketing), when used in conjunction with intumescent caulking to seal any potential internal frame penetrations that could permit the escape of

smoke, is capable of sealing of hot smoke as defined by National Fire Protection Association (NFPA) Standard 105 (NFPA-105); and 3) a third plane, a horizontally projecting planer surface set about the opening and projecting perpendicularly away from the user and the mounting wall face into the chute throat, such projection accomplished by the judicious positioning of vertical support elements forming a boundary between the sides of the opening and the vertical plane of the side mounting surfaces and by the judicious provision of horizontal projections at right angles to the vertical surfaces of the top and bottom elements of the frame, to create a four-sided, generally rectangular opening in the middle of the frame element providing projection into an existing wall opening and/or chute throat thereby permitting the use of any standard chute opening for disposal through the frame projection which also serves to establish in a novel manner unique to the current art, an effective opening in compliance with the provisions of NFPA-82, Standard on Incinerators and Waste and Linen Handling Systems and Equipment, for the prescribed chutes, in addition to qualifying as the basis for a new, proposed UL Standard for certification of the present art for retrofit installation thereby overcoming the compromising failure of previous art in this regard, and

a stop assembly mounted within said frame providing, cooperatively with the topmost component of the frame, a mounting surface for gasketing capable of stopping: 1) the passage of noxious odors emanating from the materials disposed of in the chute and migrating up the chute surface; and 2) ambient or warm smoke in accordance with the definitions of NFPA-105 and the further gasketing requirements of NFPA-80 (Stage I Gasketing), such mounting surface being inclined away from the user at the door bottom to provide full time gravitational force to properly compress the Stage I gasketing for reliable performance, and

a door panel structurally supported by the vertical frame elements creating the sides of the opening by means of a 1" diameter steel pipe located horizontally and pivotally at the top of the door panel and designed to act in rotation away from the user with the arc of its swing being defined by the locus of points of the bottom of the door panel swinging away from the user, which door panel is comprised of several components divided into two sections of functionality:

an inner door frame comprised a front panel, two side panels and a bottom panel, of heavy gauge metal welded together to form a unitized frame/tray weldment in such a fashion as to utilize the steel pipe at the top of the frame tray as a fifth side of six possible sides, to form a tray for the insertion of fibrous material/insulation for the achievement of the desired Underwriters' Laboratories (UL) B-Label construction in accordance with UL Standard 10C (UL 10C), Positive Pressure Fire Tests of Door Assemblies, which provides for control of door deflection and smoke control for such assemblies, and

an outer, two-piece skin of a decorative nature that also provides, cooperatively with holes, one on each side of both the front skin panel and the sides of the interior door frame the receptors for the dual, positive latching mechanism exclusive to the current art, and further, the mounting surfaces for additional Stage II gasketing on the side and bottom surfaces of the door panel, which, in turn, work cooperatively with an additional application of Stage II gasketing on the forward facing side of the installed 1" pipe support at the top to provide full sealing in the event of a hot smoke fire event, and

mechanical, electronic, electro-pneumatic, or fully pneumatic, dual positive latching activation means, novel and unique to the current art, mounted within the inlet door frame designed to engage the door panel and the stop assembly to provide reliable, fail-safe

latching means to insure engagement of the Stage I and Stage II gasketing systems as appropriate to both daily usage and fire events, and

supervised access control of the dual, positive latching activation means through the use of a key in the case of the mechanical and fully pneumatic systems, and through the use of magnetic reed switching (in the case of the electronic and electro-pneumatic systems) activated by passing a key-fob-mounted-magnet near an opening in the top of the trim that exposes the reed switch which is mounted in the top front face of the frame, activating a timer that both activates the latches and withholds them for a sufficient time, approximately ten seconds, to allow a disabled or other individual sufficient disposal time without concern for premature closing if the door panel, and

assisted lifting for the door panel created by the presence of a gas-over-hydraulic-piston, mounted nearly vertically on either side of the frame interior to provide for assisted lift of the door panel insuring that the panel, that can be pushed open by pushing the disposal materials away from the user and, thereby, down the chute, and held open by such disposal for as long as necessary as determined by the time the user requires to dispose of materials as such door panel with assisted lift is held open by the material of disposal, which when fully beyond the open position of the door panel, then allows the door panel to begin to close by gravity, providing for

dampened closing by means of a second gas-over-hydraulic-piston which functions to: first protect the user from debris dropped from above which might impact the door, such dampened closing designed to withstand such impact; and secondly, to control the rate of close to allow the disabled sufficient time to retract their hands safely on top of the fact that the dampened closing allows for minimal pressure, as might be exerted by hands or fingers coming into contact with the closing door panel to stop said door panel in accordance

with the criteria of ADA; and thirdly to allow for a pressure increase in the last approximately two inches of closing travel to insure compression of the Stage I gasketing and to further facilitate the novel and unique dual positive latching of the inlet door, and serving as the basis for a new proposed NFPA standard for a fail-safe, door-closed position in the event of an equipment component malfunction, and

an exterior trim piece, designed variously for retrofit and new construction installation of the inlet door provides: 1) either surface mounted or flush mounted protection to facilitate complete covering of the exterior perimeter of the frame to protect the internal components; and 2) also provides, by virtue of a horizontal projection into the base of the opening, a lip to cover the bottom Stage I gasket to protect it from wear, etc. during normal use, and 3), by provision and placement of opening area perimeter parameters creates additional verification of the criteria for effective opening as stated in NFPA 82..

2. An inlet door according to claim 1 that through a combination of gasketing and caulking with materials in compliance with NFPA 80, NFPA 105, and installed in such a way as to provide air tightness in accordance with UL 1784 provides added Life Safety to building using public and those who protect that public from the dangers inherent in fire events.

3. An inlet door according to claim 1 that, through a combination of features including a frame, and a calibrated opening in that frame and its associated stop assembly and trim, and various and thoughtful use of fire stopping capabilities creates an inlet door capable of being rapidly installed into a retrofit construction environment while simultaneously improving the Life Safety of the facility into which it is introduced.